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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/604,267	07/07/2003	Shan-Chyun Ku	FTCP0021USA	1266

27765 7590 12/11/2006

NORTH AMERICA INTELLECTUAL PROPERTY CORPORATION  
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EXAMINER

DO, CHAT C

ART UNIT PAPER NUMBER

2193

DATE MAILED: 12/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/604,267

Applicant(s)

KU, SHAN-CHYUN

Examiner

Chat C. Do

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2193

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 27 October 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6 is/are allowed.
- 6) ☒ Claim(s) 1 is/are rejected.
- 7) ☒ Claim(s) 2-5 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

1. This communication is responsive to Amendment filed 10/27/2006.
2. Claims 1-6 are pending in this application. Claims 1 and 6 are independent claims. This Office Action is made final.

#### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 1 is rejected under 35 U.S.C. 103(a) as being obvious over the admitted prior art in view of Sager et al. (U.S. 6,852,764).

Re claim 1, the admitted prior art discloses in Figures 1-5 a method for improving processing efficiency of pipeline architecture with a processor (e.g. col. 1 paragraph [0004] as pipeline architecture), the processor (e.g. Figure 1 and first three lines of paragraph [0005]) having: a first functional unit for executing a calculation task (e.g. part 12 in Figure 1); a second functional unit for executing another calculation task (e.g. part 14 in Figure 1); and a control unit (e.g. part 16 in Figure 1) electrically connected to the first and the second functional units for generating a plurality of control signals to control the first and the second functional units (e.g. paragraphs [0005-0006] wherein the control

unit 16 generates two control lines to functional units 12 and 14 for orderly and properly execute calculation task as seen in lines 7-15 in paragraph [0005]); the method comprising: (a)executing a first calculation task with the first functional unit or the second functional unit (e.g. part 12 in Figure 1, calculation F in Figure 3, paragraph [0008], and lines 5-6 in paragraph [0005]); (b)determining an executing time period of a second calculation task (e.g. part 12 in Figure 1, calculation D in Figure 3, and paragraph [0008]) with the control unit (e.g. part 16 in Figure 1 and paragraph [0008]) according to the functional unit executing the first calculation task (e.g. paragraph [0006] as the first functional unit executes in one cycle and the second functional unit executes in two cycles, and Figures 4-5 wherein the F, D, R...calculation tasks are executed sequentially), an executing time period of the first calculation task (e.g. last four lines in paragraph [0007], paragraphs [0009] and [0011], every task is executed in two cycles and the next calculation is waited for turn to be executed with stall cycle as necessary), (c)executing the second calculation task with the first functional unit (e.g. part 12 in Figure 1, calculation D in Figure 3, and paragraph [0008]) according to the executing time period of the second calculation task determined in step (b) (e.g. the controller unit 16 in Figure 1 is scheduled or controlled when to execute the task accordingly). The admitted prior art fails to disclose the determination of an execution time also depend on whether the second calculation task depends upon a result of the first calculation task. However, Sager et al. disclose a pipeline architecture (e.g. abstract, col. 1 lines 33-63, and Figures 1-2) with the determination of an execution time also depend on whether the second calculation task depends upon a result of the first calculation task (e.g. col. 5 line 57 to

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col. 6 line 8 wherein the scheduler, for scheduling when to execute the instruction, will determine and verify the data dependencies from one instruction to another instruction before dispatch the next instruction in pipeline, and col. 5 line 50-58). Therefore, it would have been obvious to a person having ordinary skill in the art the time the invention is made to add a step of the determination of an execution time also depend on whether the second calculation task depends upon a result of the first calculation task as seen in Sager et al.'s invention into the admitted prior art's invention in pages 1-2 because it would enable to efficiency utilize the pipeline of calculation which leads to higher pipeline throughput (e.g. col. 1 lines 25-32, col. 1 lines 40-56, col. 2 lines 33-44, col. 3 lines 7-11, and col. 11 lines 54-68).

#### ***Allowable Subject Matter***

5. Claim 6 is allowed.
6. Claims 2-5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Response to Arguments***

7. Applicant's arguments filed 10/27/2006 have been fully considered but they are not persuasive.
  - a. The applicant argues in page 10 first paragraph for claim 1 that the admitted prior art fails to disclose the limitation of determining an executing time period of a second

calculation task according to an executing time period of the first calculation task as cited in the claimed invention.

The examiner respectfully submits that the admitted prior art clearly discloses the limitation of determining an executing time period of a second calculation task according to an executing time period of the first calculation task as cited in the claimed invention regardless how the executing time period is defined. The common definition of executing time period is the interval of time is used to complete a task. As clearly addressed in paragraph [0009], the second task is executed in either one or two cycles depending on the dependency of the first task wherein the second cycles of the second executing task is the stall cycle.

- b. The applicant argues in page 10 fourth paragraph to page 11 first paragraph for claim 1 that the secondary reference by Sagar fails to disclose the missing limitations as determination of an execution time also depends on whether the second calculation task depends upon a result of the first calculation task.

The examiner respectfully submits that the scheduler in Figures 1-2 and 4 of the secondary reference clearly meets the missing limitation in the primary reference, particularly col. 5 line 35 to col. 6 line 8. In this citation, Sagar clearly discloses determination of an execution time also depends on whether the second calculation task depends upon a result of the first calculation task wherein the task is to execute completely the instruction and the execution time is the

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corresponding latencies of executing the instruction or the anticipated execution time of the instruction.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chat C. Do whose telephone number is (571) 272-3721. The examiner can normally be reached on M => F from 7:00 AM to 5:30 PM.

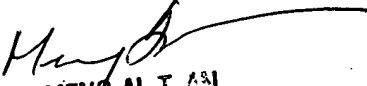
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chat C. Do  
Examiner  
Art Unit 2193

December 6, 2006

  
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